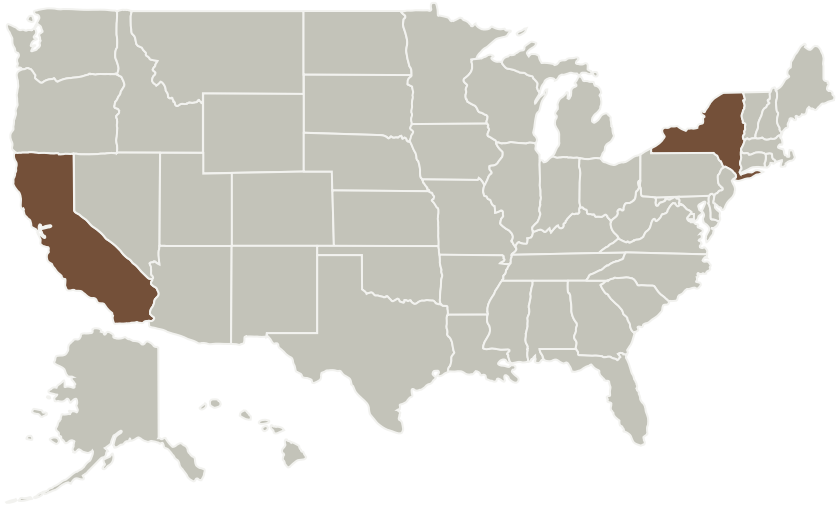
Advanced FUVUV/Visible Photon Counting and Ultralow Noise Detectors

Completed Technology Project (2015 - 2018)

Project Introduction

We will develop detectors with high efficiency and photon counting capability in the UV/Optical/NIR by combining our bandstructure engineering and high efficiency detection techniques with both CMOS imagers with in-pixel gain as well as electron multiplied CCDs and compare the performance in terms of noise, efficiency, uniformity and environmental (radiation and thermal cycling) stability. We will build on our molecular beam epitaxy (MBE) – and atomic layer deposition (ALD)-based techniques for integrated coatings and further develop and advance the TRL of silicon arrays with high efficiency in the spectral range < 200 nm; and finally we will advance the TRL of high in-band efficiency and high out of band rejection coatings by integration theses coatings with high TRL CCD detectors, measure the quantum efficiency and rejection ratio. This effort directly addresses the need for detectors as stated in the SAT call.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
California Institute of Technology(CalTech)	Supporting Organization	Academia	Pasadena, California

Primary U.S. Work Locations	
California	New York

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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Responsible Program:

Strategic Astrophysics Technology

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Project Management

Program Director:

Mario R Perez

Program Manager:

Mario R Perez

Principal Investigator:

Shouleh Nikzad

Co-Investigators:

Christopher Martin
David Schiminovich
Michael Hoenk
Carlos J Velazquez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

Target Destination

Outside the Solar System